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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/807,986	03/24/2004	Ronald M. Willett	HES 2003-IP-013013UI	4459

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EXAMINER
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SMITH, MATTHEW J

ART UNIT	PAPER NUMBER
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3672

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/807,986

Applicant(s)

WILLETT ET AL.

Examiner

Matthew J. Smith

Art Unit

3672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 7-26 and 29-67 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 54-60 and 65-67 is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-12, 14, 15, 17-26, 29-34, 37, 38, 40, 42-46, 48, 51-53, and 61-63 is/are rejected.
- 7) ☒ Claim(s) 13, 16, 35, 36, 39, 41, 47, 49, 50 and 64 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 40, 42-44, 48, 51, and 53 are rejected under 35 U.S.C. 102(e) as being anticipated by Tolman et al. (6543538).

Tolman et al. disclose a method of completing a well (Fig. 17) comprising: perforating a first zone in the subterranean formation by injecting a pressurized, abrasive-solid containing fluid (col. 16, line 63) through a hydrajetting tool 410 into the formation to form perforation tunnels and openings (col. 17, lines 15-16); injecting a fracturing fluid (col. 17, line 16) into the perforation tunnels so as to create fractures along the perforation tunnels adjacent the wellbore; propagating the fracture (col. 17, line 28); at least partially plugging the fractures and openings in the first zone (col. 17, line 23; col. 18, line 11) with an isolation fluid (col. 18, lines 30-33); repeating the perforating, fracturing, and moving steps to a second zone of the subterranean formation (fig. 17); injecting the fracturing fluid into the first and second zones by the hydrajetting tool; fracturing a horizontal or deviated portion wellbore (col. 17, line 66); the hydrajetting tool kept stationary during the perforating step; cuttings left in the annulus from the perforating step pumped into the fracture during the additional

Art Unit: 3672

pumping step (since the cuttings are not disclosed as being removed, this step is considered inherent); injecting an acidizing fluid (col. 6, line 65) into the fractures; and pumping nitrogen (col. 23, line 45) to flush out the wellbore.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 7-12, 17-21, 24-26, 29-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tolman et al. in view of Bullen (3664422)

Tolman et al. disclose a method of completing a well (Fig. 17) comprising: perforating a first zone in the subterranean formation by injecting a pressurized, abrasive-solid containing fluid (col. 16, line 63) through a hydrajetting tool 410 into the formation to form perforation tunnels and openings (col. 17, line 15); injecting a fracturing fluid (col. 17, line 16) into the perforation tunnels so as to create fractures along the perforation tunnels adjacent the wellbore; moving the tool to a second zone (col. 11, lines 16-31) before or during plugging; at least partially plugging the fractures and openings in the first zone (col. 17, line 23; col. 18, line 11) with an isolation fluid (col. 18, lines 30-33); repeating the perforating, fracturing, and moving steps to a

Art Unit: 3672

second zone of the subterranean formation (fig. 17); the isolation fluid is a ceramic proppant, resin, or cross-linked gel (col. 18, lines 30-33); the hydrajetting tool kept stationary during the perforating step; each fracture having an opening (Fig. 17); injecting the fracturing fluid into the first and second zones by the hydrajetting tool (col. 17, lines 19-21), which injects the fluid into the zones at a pressure above that required to fracture the formation (col. 17, line 20); moving the hydrajetting tool to the second zone after plugging is performed (col. 18, line 11); the hydrajetting tool kept stationary during the perforating step; and injecting an acidizing fluid (col. 6, line 65) into the fractures but not plugging fractures with an enhancing isolation fluid and injecting acidizing fluid to maintain conductivity.

Bullen describe plugging fractures and openings with an enhancing isolation fluid (col. 2, lines 19-22).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use an enhancing isolation fluid in the Tolman et al. method, as described by Bullen, in order to stimulate the well with little reservoir contamination and a high percentage of load fluid recovery (Bullen, col. 2, lines 10-13).

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tolman et al. in view of Bullen as applied to claim 1 above, and further in view of Hill (3712379).

The combination discloses the using an enhancing isolation fluid in a completion method plus injecting an acidizing fluid into the fractures, so as to etch the fractures and thereby maintain conductivity within the fractures at a later time but not injecting fluid into a formation at a pressure above the fracture pressure.

Hill discusses injecting fluid into a formation at a pressure above the fracture pressure (col. 4, line 10).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to inject fluid into a formation at a pressure above the fracture pressure, as discussed by Hill, in order to create more than one vertical fracture in an interval (Hill, col. 3, lines 6-7).

Claims 14, 15, 37, 38, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tolman et al. in view of Bullen as applied to claim 1, 24, and 40, respectively, above, and further in view of Montgomery (6070666).

The combination discloses the using an enhancing isolation fluid in a completion method plus injecting an acidizing fluid into the fractures, so as to etch fractures and thereby maintain conductivity within the fractures at a later time but not pumping enough fracturing fluid to plug the fractures or removing the isolation fluid from the first zone performed by circulating the isolation fluid out of the wellbore and back to the surface after all of the desired fractures have been formed.

Montgomery presents pumping enough fracturing fluid, comprising sand (col. 3, line 42) adhesive resin (col. 4, line 11) and consolidating agent (col. 3, line 51), to plug the fractures (col. 3, lines 37-40) and removing the isolation fluid from the first zone by circulating the isolation fluid out of the wellbore and back to the surface after all of the desired fractures have been formed (col. 5, lines 33-37).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to remove an isolation fluid out of fractures, as presented by Montgomery, in order to produce all the fractured well zones.

Claims 22, 23, 45, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tolman et al. in view of Bullen as applied to claim 1 and 40, respectively above, and further in view of Desbrow (2758653).

The combination discloses the using an enhancing isolation fluid in a completion method but not rotating a hydrajete tool.

Desbrow shows a hydrajete tool 14 that rotates and moves vertically during cutting (col. 5, lines 38-42).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to cut helical and vertical slots to complete the Tolman et al. well, as shown by Desbrow, in order to provide horizontal, vertical, or sloping fractures (Desbrow, col. 2, lines 4-11).

Claims 61-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tolman et al. in view of Montgomery.

Tolman et al. disclose a method of completion comprising hydrazetting casing and a formation, fracturing one zone, plugging the zone, and moving to another location then repeating the process but not pumping enough fracturing fluid to plug the fractures or removing the isolation fluid from the first zone performed by circulating the isolation fluid out of the wellbore and back to the surface after all of the desired fractures have been formed.

Montgomery presents pumping enough fracturing fluid, comprising sand (col. 3, line 42), adhesive resin (col. 4, line 11), and consolidating agent (col. 3, line 51), to plug fractures (col. 3, lines 37-40) and removing the isolation fluid from the first zone by circulating the isolation fluid out of the wellbore and back to the surface after all of the desired fractures have been formed (col. 5, lines 33-37).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to remove an isolation fluid out of fractures, as presented by Montgomery, in order to produce all the fractured well zones.

***Allowable Subject Matter***

Claims 54-60 and 65-67 are allowed.



Claims 13, 16, 35, 36, 39, 41, 47, 49, 50, and 64 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Response to Arguments***

Applicant's arguments filed 30 November 2006 have been fully considered but they are not persuasive.

Applicant argues the 102 rejection under Tolman et al. by asserting that Tolman et al. does not teach or suggest that the jetting tool is used to inject fracturing fluid and the propagate the fracture. Examiner does not agree. The examiner lacks sufficient insight to understand how the Tolman et al. "jetting tool .. to place perforations" is patentably distinct from "injecting fracturing fluid and then propagate the fracture". Perforations all propagate. Without a specified pressure or force, the fracture created by Tolman et al. will propagate, as intended. The examiner contends claim 40 does not recite "before or during plugging; propagating the fracture", as argued on page 15. This claim states "pumping additional fracturing fluid ... to propagate the fracture" and "(e) plugging at least partially ..." which Tolman et al. disclose in column 11, lines 19-21.

Applicants' discuss, on page 18, the 103 rejection under Bullen by asserting that Bullen does not teach or suggest to plug with an enhancing isolation fluid. Examiner does not agree. The examiner equates "plugging at least partially" (claims 1 and 24)

with Bullen's "closed sufficiently". Further, Bullen's background recitation of fluids typically used in hydraulic operations must have filter loss values sufficiently low to permit build-up and maintenance of the required pressures at reasonable injection rates normally requiring such fluid have adequate viscosities or contain filter-loss control agents which will plug the pores in the formation is describing the state of the art, not the solution and, again, "closed sufficiently" is considered the same as plugging the fractures. Applicants' claim resins used as isolation fluid, Bullen describes using resins to close sufficiently, not completely, sufficiently, the fractures—the same function as applicants.

Applicants' argue, on page 24, the 103 rejection under Montgomery by asserting that Montgomery does not teach or suggest Neither Tolman nor Montgomery directly teach "(a) perforating a first zone in the subterranean formation by injecting a perforating fluid through a hydrajetting tool into the subterranean formation, so as to form one or more perforation tunnels; (b) fracturing the first zone of the subterranean formation by injecting a fracturing fluid into the one or more perforation tunnels; (c) perforating a second zone in the subterranean formation by injecting the perforation fluid through the hydrajetting tool into the subterranean formation, so as to form one or more perforation tunnels in the second zone; (d) fracturing the second zone of the subterranean formation by injecting the fracturing fluid into the one or more perforation tunnels; and (e) pumping enough fracturing fluid into the wellbore during step (d) to plug the fractures in the first zone." In addition, the background of Montgomery suggests that the practice in horizontal wells of using "sand plugs are not

Art Unit: 3672

readily usable because the sand slumps and exposes the fractures in the previously fractured zone" as recited in claim 62. (Col. 1, lines 40-45). Examiner does not agree. As noted above, Montgomery's background recitation is describing the state of the art, not the solution and the Tolman et al. recitation of perforations "hydraulically sealed" is similar to plugging fractures. Montgomery is applied consistent with using sand and resin used to plug fractures, as suggested, plugging, by Tolman et al.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chan (7114567) depicts fracturing to create wormholes.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 3672

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Smith whose telephone number is 571-272-7034. The examiner can normally be reached on T-F, 8-3.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David J. Bagnell can be reached on 571-272-6999. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3672

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



David Bagnell  
Supervisory Patent Examiner  
Art Unit 3672

MJS *MJS*  
16 January 2007